

which the present invention is applied; ~~and~~

Fig. 4 provides a flow chart of a signal processing method for forming an ideal beam pattern in the two-dimensional array antenna system as shown in Fig. 3.

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Preferred Embodiment of the Invention

Hereinafter, preferred embodiments of the present invention will be described in detail with reference to the accompanying drawings.

<Design of one-dimensional optimum array antenna>

At first, it will be described in detail for design of a one-dimensional optimum array antenna.

Fig. 1 is an exemplary diagram of a one-dimensional array antenna system in a CDMA telecommunications network, to which the present invention is applied and Fig. 2 shows a flow chart of a signal processing method for forming an ideal beam pattern in the one-dimensional array antenna system as shown in Fig. 1.

Referring to Fig. 1, M signals $S_1(t)$, $S_2(t)$, . . . , $S_M(t)$ are applied to N receiving antennas. In Fig. 1, the array antenna includes array antenna elements 10, a down-converter and demodulator 20, a multiplier 30, and an adder 40. $x_m(t)$ is a signal arrived at an m-th antenna, ω_m is a complex weight vector applied to the arrived signal at the m-th antenna to form a desirable beam pattern, and $y(t)$ is an output of the array antenna.